

stargazers. There are few more alluring spectacles than that afforded by the prolific fall of meteors on a genial August night, and we need not wonder that in the past few years observers of these phenomena have greatly increased, and that a more general interest than formerly is taken in recording apparitions of shooting stars.

This year the conditions will be favourable, for the moon will not offer any serious impediment to observation between about July 28 and August 12. It will be possible, therefore, to watch the progress of the shower through the fortnight comprising its more active stages. The weather is often a great drawback to investigations of this character (and this particularly applies to the English climate), for cloudy skies destroy the continuity of the work and occasion breaks which materially affect the value of the results. In watching a display similar to that of the Perseid stream, which is presented over a comparatively lengthy period, it is most essential to secure observations on many successive nights, so that the relative strength of the shower and the position of its radiant point may be determined at short and regular intervals. This is, however, not often practicable in England, though in exceptional cases there is little to take exception to in regard to prevalent weather. For instance, in August, 1901, thirteen of the fifteen nights from the 10th to 24th inclusive were clear, or partly so, and enabled observations to be obtained.

Everyone who views a meteoric shower would do well to record some of its leading features. One of the most important requirements is that the apparent paths of the meteors amongst the stars be registered. The fainter class of objects may be disregarded, but the lines of flight of the brighter meteors should be marked upon a celestial globe or star chart, and the right ascension and declination of the beginning and end points read off and entered into a book suitably ruled for the purpose. Such records, if carefully and accurately acquired, possess considerable value, as they furnish the materials from which the real paths and radiants of the individual meteors may be ascertained. Even those observers who have had no previous experience in work of this kind should make an effort to record the Perseid shower, for it will furnish an entertaining and instructive employment, and probably intensify their interest in the subject. In spite of the oft-repeated observation of the August display in past years, we have by no means completed our knowledge of its visible behaviour, and it should be further watched for data to enable us to more fully comprehend its various observational and theoretical aspects.

W. F. DENNING.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

It is announced from Berlin that the Academy of Münster has been raised to the *status* of a University.

At University College, London, on July 14, Mr. H. E. H. Smedley gave a demonstration of his methods of wax-modelling as applied to plant structures, more particularly with a view to elucidating complex anatomical relations.

At Bedford College for Women (University of London), Dr. W. H. Willcox has been appointed lecturer in hygiene. The Pfeiffer scholarship in science has been awarded to Miss E. A. Bridger. Six open Pfeiffer scholarships of the value of 15 guineas will be awarded to the best candidates holding a degree, or equivalent, in arts or science wishing to train as secondary teachers. Application should be made to Miss H. Robertson, the head of the training department, not later than December 13, 1902.

AMONG the examiners for the London Matriculation Examinations of September, 1902, and June, 1903, we notice the following:—Mathematics, Mr. W. D. Eggar and Prof. G. B. Mathews, F.R.S.; physics, Dr. A. H. Fison and Mr. D. Rintoul, M.A.; chemistry, Mr. H. B. Baker, F.R.S., and Dr. G. S. Turpin; botany, Mr. H. Richardson and Mr. V. H. Blackman; zoology, Dr. G. Herbert Fowler and Mr. O. Latter; geography, Mr. G. G. Chisholm and Prof. W. W. Watts; geometrical and mechanical drawing, Mr. Walter Hewson and Mr. H. G. Christ.

It will be remembered that in January last the Drapers' Company offered to devote the sum of 30,000*l.* to the extinction of the debt on University College, "provided that the Senate of

the University of London and the Corporation of University College can, before February 28, 1903, agree upon a scheme for the incorporation of the college in the University, and such scheme be approved by the Company." The *University Gazette* of July 19 announces that the Senate has considered the proposal in all its bearings, both administrative and financial, and has approved the outlines of a scheme which had been drafted in conference with the council of the college as a preliminary step towards its realisation. Further negotiations are in progress between the University and the college with respect to certain details, and it is hoped that by the date specified a complete scheme for the incorporation of the college in the University may be agreed upon by both parties. The realisation of the scheme will depend upon whether it is possible to raise the necessary funds.

THE Directory of the Board of Education, South Kensington, has been superseded by "Supplementary Regulations for Secondary Day Schools and for Evening Schools," a copy of which has just been received. The greater part of the volume (pp. 42 to 241) consists of syllabuses of the subjects in which the Board of Education holds examinations. There are, in addition, syllabuses of certain subjects in which the Board does not hold examinations and lists of apparatus suitable for use in science classes. Some of the syllabuses contain very helpful instructions for experiments and other practical work. For instance, the syllabus of practical plane and solid geometry gives outlines and hints for a course of construction and measurement of an original character, much in advance of the traditional plane and solid geometry and geometrical drawing. The syllabuses which were formerly given in the Code for Evening Continuation Schools are now included in the volume before us, among the subjects being general rudimentary science and elementary rural science.

SCIENTIFIC SERIALS.

THE *Journal of Botany* for July opens with an account by Mr. G. S. West of algae obtained from hot springs. One collection from Iceland consisted mainly of filamentous *Myxophyceæ* and small *Diatoms*. A new species of the genus *Aulosira* was found in considerable abundance, also *Mastigocladus laminosus*, which is commonly found in all hot springs. Twelve genera of green and blue-green algae are represented. A second collection from Sira Ramau in the Malay Peninsula produced two new species, a *Symploca* and a *Phormidium*. Figures of the more important species are given on an accompanying plate.—Mr. Spencer le Moore describes five new species of *Rubiaceæ*, and three belonging to the *Asclepiadaceæ*, occurring in Dr. Rand's Rhodesian collections which are incorporated in the National Herbarium.—In the list of Glamorganshire plants observed by the Rev. E. S. Marshall and W. A. Shoobred in June last year, several new records are given.—The varieties of *Hieracium anglicum* form the subject of a note by Mr. F. A. Williams.—Mr. E. F. Linton contributes an appreciative biography of the late Mr. J. C. Mansel-Pleydell.

American Journal of Science, July.—On spectra arising from the dissociation of water vapour, and the presence of dark lines in these spectra, by John Trowbridge. With powerful discharges in hydrogen, oxygen and rarefied air the same spectrum is obtained, and this is regarded as arising from the dissociation of rarefied water vapour. From a study of the spectrum of powerful spark discharges under water the author concludes that dissociation of water vapour takes place in the atmosphere of the sun; oxygen must therefore be present. The dissociation of water vapour, under the effect of powerful electrical discharges in the presence of small amounts of atmospheric air, results in the production of argon, even in tubes presumably filled with dry hydrogen. The great brilliancy of the dissociation spectrum of water vapour, which obscures the spectra of metallic vapours, and the presence of dark lines due to photochemical reversals, show the need of caution in accepting photographic evidence in regard to the states of development of stars.—The occurrence of Greenockite on calcite from Joplin, Missouri, by H. B. Cornwall. The Greenockite occurs as a bright yellow, dust-like coating on the calcite, which can be easily rubbed off with the finger. Beneath this coating is a thin layer of sphalerite.—A quantitative study of variation in the fossil brachiopod *Platystrophia inyx*, by E. R. Cumings and A. V. Mauck.—Studies of Eocene Mammalia in the Marsh

collection, Peabody Museum, by J. L. Wortman. The present instalment contains details of *Sinopa minor*, *Sinopa major*, together with observations upon the marsupial or metatherian relationships of the Creodonts. A summary of the results obtained for the whole series of Eocene Carnivora in the Marsh collection is appended.—New exposures of eruptive dikes in Syracuse, by P. L. Schneider.—Petrography of recently discovered dikes in Syracuse, N.Y., with note on the presence of melilite in the Green Street dike, by C. H. Smyth, jun.—The significance of certain Cretaceous outliers in the Klamath region, California, by O. H. Hershey.—The action of copper sulphate upon iron meteorites, by O. C. Farrington.—The classification of meteorites as active and passive towards solutions of copper sulphate, as given by Wöhler, is shown to be untenable. The rapidity with which the copper is deposited upon a thoroughly cleaned surface appears to decrease with the increase of the percentage of nickel, the temperature remaining constant, and hence meteoric iron, which always contains nickel, may be readily distinguished from terrestrial iron by this reagent.—A petrographical contribution to the geology of the eastern townships of the province of Quebec, by J. A. Dresser.—The action of carbon dioxide upon the borates of barium, by L. C. Jones. A criticism of the method for estimating boric acid of Morse and Burton.—Studies in the Cyperaceæ, by T. Holm.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, June 19.—"On the Correlation between the Barometric Height at Stations on the Eastern Side of the Atlantic." By Miss F. E. Cave-Brown-Cave, Research Student of Girton College, Cambridge, with some assistance from Karl Pearson, F.R.S., University College, London.

In a memoir on the correlation and variation of the barometric height at divers stations in the British Isles by Prof. Karl Pearson and Dr. Alice Lee, it is suggested (i.) that interesting results might be obtained by correlating the barometer at stations on the east and west sides of the Atlantic, allowing an interval of time between the observations (see *Phil. Trans.* vol. cxc. A. p. 459); and (ii.) that with a certain distance between stations, the correlation would be found to be negative, i.e. a high barometer at the one station corresponding to a low barometer at the second (see p. 467).

In order to deal with these points, steps were taken in 1897 to collect the necessary material. Twenty years, 1879-1898 inclusive, were selected for consideration, and the early morning barometric observations for these years, copied from material provided by the kindness of the British and other Meteorological Offices.

A preliminary study has been made of the East Atlantic stations, and this has impressed us with the desirability of continuing, if possible, our chain of stations right down the west coast of Africa, even to the Cape. The great mass of material to be dealt with, and the many new problems which arise in an almost entirely novel investigation of this kind, have meant, of course, very slow progress, and while publication of the final conclusions must be delayed for some time yet, it seems desirable to draw attention to a few of the results already reached for the East Atlantic stations.

In the first place it was soon discovered that the winter and summer months (equinox to equinox) must be treated separately. It was already known that the average height varied considerably in the summer and winter months, but there are also very significant differences in the variability, and, in what we are most concerned with, the correlation. For example, there is hardly any correlation (0.04) between Lisbon and Valencia in the summer, but in the winter it is quite considerable (0.22). Further, the results worked out in two groups of ten years each, show that very sensible differences in mean, variation, and correlation can exist between one decade and the next, so that at least twenty and probably more years are desirable if we are to obtain steady values for the barometric constants. In the next place, while we have found a small but sensible cross Atlantic barometric correlation after a definite interval of time, we must wait for more complete American data, and for still closer investigation of the best interval for different stations

before results on this point are published. The second suggestion, however, has been amply verified, and to draw attention to this is the principal object of the present preliminary notice.

As we go generally south from any station, we reach a point at which for readings on the same day there is no correlation at all. *For stations beyond this point the correlation becomes negative, reaches a negative maximum, and then begins to decrease.* Clearly it must reach a second zero. What happens after this? Does the correlation remain zero for all greater distances? To fully answer this problem we must obtain data south of Sierra Leone—in fact, we want data for St. Helena, Ascension, and the Cape, and have taken steps to obtain them.

Thus Valencia is positively correlated with Bôdô. Lisbon, however, is negatively correlated with Bôdô, but positively with Valencia. We require to go as far south as Funchal to find a negative correlation with Valencia. To get a negative correlation with Lisbon we must go as far as Sierra Leone, which has become positive again for both Bôdô and Valencia. At St. Helena we have our second negative correlation zone for both Bôdô and Valencia, while we are only in the second positive zone for Lisbon. In other words, the curve of barometric correlation with distance from a station appears to give roughly the form:—



We do not find with increasing distance a diminishing correlation, as of a curve rapidly asymptoting to $0x$, but as it were a wave-curve of diminishing amplitude. There is not apparently an area of positive correlation surrounded by a field of zero correlation, but going south there are only *points* of zero correlation, not *regions* of zero correlation. Probably if the area of investigation can be extended we shall find *lines* not zones of zero correlation round each station, separating districts of positive and negative correlation. What we are certain about is, that a zone of positive correlation is followed by a zone of negative correlation. What we are less sure about is, that this negative zone is again followed by a positive zone of much less intensity, but our rather meagre results certainly suggest it.

Full numerical data are given in the paper for Bôdô, Skudenes, Valencia, Lisbon and Funchal, and less complete data for Sierra Leone and St. Helena.

We hope shortly to complete our calculations to the Cape, and then to finish the work already begun on the American stations. Meanwhile, we think that the correlation of a series of stations following roughly a parallel of latitude across Europe and Russian Asia would throw a flood of light on whether a chain of roughly north and south stations differs wholly in character from a chain of east and west stations. The magnitude of the computations, however, almost precludes the idea that any individual worker or workers can hope to complete such a task within a reasonable period.

DUBLIN.

Royal Dublin Society, June 18.—The Right Rev. Monsignor Molloy in the chair.—Prof. J. Joly, F.R.S., communicated a paper by Mr. W. B. Wright, of the Geological Survey, on some results of glacial drainage round Montpelier Hill, co. Dublin. At the lowest point of the ridge which connects the outstanding hill of Montpelier with the main mass of the Dublin Mountains to the south is a dry, transverse gap, connecting the valleys on either side; this gap cuts directly across the junction of the granite and slate, and has apparently no reference to the structure of the rock in which it is excavated. The occurrence in one of the side valleys of a thick deposit of gravels, ending in a fairly straight line on the Boulder Clay plain, which stretches up to its mouth, is suggestive of the occurrence in this valley, during the later stages of the decay of the ice sheet, of an ice-dammed lake which had its overflow channel through the gap. The gravel is composed for the most part of limestone and other material foreign to the ice sheet, indicating that the depositing waters flowed mainly from the ice sheet. At the other end of the gap are some mounds of granite and slaty material, probably the debris from it. At a subsequent period the drainage appears